

COLLINS et al
Appl. No. 10/511,747
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AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Claims 1-43 (cancelled).

44 (previously presented). A process for preparing particles of an esterifiable scale inhibitor cross-linked with a polyol via ester cross-links comprising the steps of:

a) heating, in a reactor vessel, a concentrate comprising water, an esterifiable scale inhibitor, a polyol, and a strong acid catalyst under low shear conditions thereby forming a macrogel of the esterifiable scale inhibitor cross-linked with the polyol;

b) drying the macrogel to form a solid; and

c) comminuting the solid to give particles of esterifiable scale inhibitor cross-linked with polyol having a mean particle diameter of less than 1 micron.

45 (currently amended). A process as claimed in claim 44 wherein the shear rate in the reactor vessel is less than 0.1 ms^{-1} , ~~preferably less than 0.005 ms^{-1} .~~

46 (currently amended). A process as claimed in claim 44 wherein the dried solid contains less than 0.1 % by weight of water, ~~more preferably less than 0.05 % by weight of water.~~

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47 (currently amended). A process as claimed in claim 44 wherein the comminuted particles have a mean diameter in the range 100-750 nm, ~~more preferably 200-500 nm.~~

48 (previously presented). A process as claimed in claim 44 wherein the solid is comminuted in the presence of a polymer which coats the exposed surfaces of the comminuted particles.

49-51 (canceled).

52 (previously presented). A method of inhibiting scale formation in a subterranean formation comprising:

(a) injecting a suspension comprising particles of a controlled release scale inhibitor suspended in an aqueous medium into a formation through an injection well wherein the particles have a mean diameter of less than 1 micron;

(b) allowing the suspension to percolate through the subterranean formation towards a production well; and

(c) controllably releasing the scale inhibitor from the particles in the near well bore region of the production well.

53 (currently amended). A method as claimed in claim 52 wherein the particles comprise an esterifiable scale inhibitor crosslinked with a polyol through ester cross-links which are hydrolysable to release said scale inhibitor.

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54 (previously presented). A method as claimed in claim 53 wherein the particles start to release the scale inhibitor through hydrolysis of the ester cross-links at a temperature of 50 to 150°C.

55 (previously presented). A method as claimed in claim 52 wherein the suspension propagates through the formation at a rate of 15 to 100 feet per day.

56 (previously presented). A method as claimed in claim 52 wherein the injection well is 0.25 to 1 mile from the production well.

57 (currently amended). A method as claimed in claim 53 wherein the esterifiable scale inhibitor cross-linked with a polyol is continuously dosed into the injection water in an amount in the range 0.01 to 2 weight percent, preferably 0.01 to 0.1 weight percent.

58 (currently amended). A method as claimed in claim 52 wherein the amount of scale inhibitor released into the production water is preferably in the range 1 to 200 ppm.

58 (new). A process as claimed in claim 45 wherein the shear rate in the reactor vessel is less than 0.005 ms^{-1} .

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59 (new). A process as claimed in claim 46 wherein the dried solid contains less than 0.05 % by weight of water.

60 (new). A process as claimed in claim 47 wherein the comminuted particles have a mean diameter in the range 200-500 nm.

61 (new). A method as claimed in claim 57 wherein the esterifiable scale inhibitor cross-linked with a polyol is continuously dosed into the injection water in an amount in the range 0.01 to 0.1 weight percent.